

# Ecological Observations of the Relation of Physical Illness, Mental Illness, and the Social Environment

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THE PSYCHIATRIST has, in general, satisfied himself that the social and behavioral sciences are of great importance to his field of endeavor; but it is fair to say that physicians in other branches of medicine have not. They are not convinced that these sciences can contribute significantly to their understanding of the infectious, degenerative, traumatic, toxic, metabolic, and neoplastic diseases that make up the bulk of human illness. They are prepared to believe that the relations of a man to his fellow men and to his society are relevant to his emotional state and to his social well being, but they are not prepared to accept these as a primary focus for their therapeutic efforts, however much their sympathy may be aroused by them. They would say that even if the relation of man to his society is relevant to "mental health" and to a subcategory of disease called "psychosomatic," the fact is primarily a matter of interest for psychiatrists, and not for physicians in general; and they would say that if the relation of man to his society is relevant only to certain definitions of ill-

ness, and to certain attitudes of students, it is hardly worthy of general medical consideration. The question that the physician asks is, "What have these relations to do with health in general, and with the illnesses of all sorts that occur among men?" It is the answer to this that must concern us.

## Distribution of Disease

More than half of all of the episodes of illness that occur among adults of similar age seem to be experienced by fewer than one-quarter of their number,<sup>1-3</sup> and this same segment of the population seems to account for more than two-thirds of the days of disability that occur among adults. In other words, most of the illnesses in our active population appear to be concentrated in a small proportion of its members—and, by and large, there is no easy explanation of why these people are most often ill. Some of their illnesses can be explained by their genetic idiosyncracies, some by their past experience with the causal agents of disease, and some by the past illnesses themselves; but in the main, these "ill people" are quantitatively, rather than qualitatively, different from "healthy" people, and the "healthy" and the "unhealthy" are not separate groups at all. In any otherwise homogeneous population, there is a continuum from the "most

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healthy" to the "least healthy." As one moves along this continuum, one finds people who display more syndromes, have more of their organ systems involved in illness, and have diseases arising from more different "specific causes."<sup>1,2,4</sup> Even the "most healthy" people in our society nearly always have dental caries, sometimes have colds, sometimes have accidents, sometimes become anxious or depressed, not infrequently experience an elevated blood pressure or become obese, and occasionally die prematurely and unexpectedly from cancer or some other disease. The same illnesses are exhibited by the "least healthy," but they occur more frequently and with greater severity, and have a greater variety of other illnesses to go with them.

#### **Complexity of Relation of "Health" and Social Environment**

The relation of the "healthy" and the "unhealthy" to their social environment cannot be a simple one. The utmost good health—long years of asymptomatic productivity and good interpersonal relations, unmarred by disability or by evidence of illness detectable by self, associates, or physicians—has been observed to occur in people of the most diverse social backgrounds and experiences: in people from many ethnic groups, from several societies, and from all levels of our own society. Continuous good health has been observed in people who have endured great poverty, physical hardship, deprivation, disruption of family ties, pronounced change in status, geographical displacement, situations of uncertainty, and various interpersonal conflicts; while recurrent illnesses of all sorts have been observed in people who have experienced none of these, but have lived in what have been ostensibly the most benign of circumstances.<sup>4</sup> Social conditions regarded as inferior or undesirable are indeed often associated with a high rate of illness in those who experience them, but within very wide limits, some people are able to tolerate, and even to thrive upon,

#### **ECOLOGICAL OBSERVATIONS**

social and physical conditions that other people regard as intolerable and incapable of supporting a healthy life.

One cannot doubt the need for studies of health and the social milieu. Questions of the relations between illness and social class, economic conditions, migration, social mobility, status change, acculturation, and similar social phenomena are pressing, and the methods of the social scientist readily lend themselves to their investigation. Nevertheless, it may be predicted that the answers that are obtained will be complex and that it will be much easier to see the application of these to the sample and to the circumstances under study than to extrapolate them to any large segment of mankind, or to any general class of social phenomena.

Thus, for example, as a part of a Study Program at the New York Hospital-Cornell University Medical Center, Dr. William N. Christenson, Mr. S. Alexander Weinstock, and Mr. Jay Schulman have undertaken to study the effects of adaptation to life in the United States upon the health of a group of Hungarians who took part in the revolution of 1956. On the basis of an initial analysis of their data, it was easy to demonstrate that the mean rate of new episodes of illness experienced by 32 Hungarians increased during their first full year in the United States. But after a more precise analysis, it became evident that this increase was accounted for by the illnesses of only 20 of the group; another 9 of these people had fewer illnesses in the United States, and the remainder experienced no change in health. Only 5 of them had more *disabling* illness during the first year in the United States, whereas 11 had less. Furthermore, those who experienced a great deal of illness in the United States were those who had also experienced a great deal of illness in Hungary. In fact, the amount of illness that a man had experienced in Hungary was by all odds the best prognostic guide to the amount that he was likely to experience in America. The rate at which men had experienced

new illness in the United States bore no relation to their performance on such standardized measures of acculturation as the Campisi Acculturation Scale<sup>10</sup> and a specially constructed test of their knowledge of marginal items of American culture.<sup>11</sup> Only by the extensive review of a man's past medical history and an intimate and comprehensive observation of his interaction with his new society could one derive a reasonable hypothesis as to why his health was what it was.

No simple exposition of the observed interactions between people, or of observed social characteristics, has provided a satisfactory explanation of the relation between health and the social environment. Nor is such an exposition likely to do so, except in rather special instances, even though a man's relation to his social environment may be highly relevant to his illnesses. The reason undoubtedly lies in the characteristics of the relationship between man and his social environment.

### Individuality of Reaction

It is well to remember that which we call the "social" and "interpersonal" environment is entirely distant, both in space and in time. With minor exceptions, it does not impinge upon us at all, except as patterns of minute amounts of energy that fall upon sense organs, and as information stored within us, representing the biologic memory of former events. "Environmental stress" and "emotional stress" simply do not exist in the sense that mechanical stress exists in a steel beam. One sometimes wishes that these terms had never been invented. Status loss, social mobility, or marital infidelity, and all of the many human experiences that accompany them, are complex stimuli to the individuals to whom they happen, and each person reacts to them in his own fashion. Even among the members of similar groups, ostensibly identical situations may have markedly different meanings for different people, and reactions are so highly varied that no two are entirely alike.

Man's relationship to the world around him is largely a communicative one.<sup>5</sup> He obtains information from the environment, evaluates it, and organizes and directs his response on the basis of this evaluation. This evaluation does not take place entirely within the central nervous system, as one might superficially assume; the "evaluation" of horse serum as an antigen takes place in the cells of the blood vessels and the reticuloendothelial system, and the evaluation of the "meaning" of the genetic material within a spermatozoon takes place within the ovum, with exquisite precision. Yet it must be admitted that most of the information received by a man from his social environment is evaluated within the higher centers of his central nervous system by a process that seems to be fundamentally the same throughout the natural world, though it is far more flexible and sophisticated than anything man himself has devised. It should hardly be necessary to point out that much of this evaluation does not enter into the awareness of the person.

Even the "unconscious evaluations" that occur in the lower centers of the nervous system and in other organs are not made upon a hit-or-miss basis. Like all biological evaluations, these are made upon the basis of directions written into the organism. Some are "built in" at birth—they are genetically or "constitutionally" determined—but many are acquired during the lifetime of the individual, for the human organism, like other living organisms, has the capacity for specifically altering its reaction patterns as it goes through life—and it is the well-known peculiarity of man that he has this capacity to a far greater degree than other living creatures.

A meaningful hypothesis about the relation of a man to his social and interpersonal environment, and the effect of this upon his health, must take into account the information that he receives from this environment, and the way that he evaluates it; for it is this to which he reacts, and not to the social environment as someone else evaluates it. This is no trivial consideration.

An understanding of the smallest and most evanescent of the cues that have been received, and an estimate of the probable meaning of these to the person who received them, may be of the utmost importance for the precise understanding of the reaction of a particular man to his surroundings. This problem of making an "estimate of the probable meaning of the situation" is well known to the psychiatrist, but it is no less easily accomplished because of this. Rather formidable methodologic difficulties are involved—and the result remains an "estimate," because one cannot "know" how a man will evaluate a given situation, and he himself cannot necessarily "tell." Too much of his evaluation may be quite outside of his awareness. The variables involved are too many, too unknown, and change too rapidly to allow them to be precisely integrated by any known process.

### **Value of Social Sciences to the Physician**

Nevertheless, useful estimates can be made. It is in helping us make rapid, working estimates of the "probable meaning of the situation to the individual" that the social scientists can most aid the physician. The classic method of estimating how a man perceives his life situation has been that of the psychiatrist and the psychoanalyst. This implicitly assumes that each man is a unique product of nature—as, in the last analysis, he is—and extracts from him as much as possible of his biologic memories of his past experience, his observed reaction patterns, and of his statements about the way that he has perceived his milieu. This method is a reasonable one for those engaged in the long-term and intensive treatment of psychiatric patients, but it is far too cumbersome and time consuming to be of great value to the physician.

In this connection, data from the social sciences can be helpful. Although every man is unique in his total life experience, his attitudes, and his values, he is by no means unique in all of these. In fact, most men are remarkably similar to other men.

### **ECOLOGICAL OBSERVATIONS**

The anthropological evidence is that the great bulk of human institutions, behavior, attitudes, values, and customs, as well as fundamental human relationships and fundamental modes of thought, are shared throughout a culture; indeed, it appears that many of them are shared throughout mankind as a part of a common heritage. A precise knowledge of a man's cultural background allows one to make a large number of working assumptions about him, with a probability that these will be correct. Furthermore, the sociologist has systematically documented the fact that people at various levels within our own society, and members of various ethnic and regional subgroups, share attitudes, values, and experiences with regard to family, marriage, friends, associates, education, religion, dress, speech, reading habits, morality, politics, and a gamut of other learned reaction patterns that can be predicted with some reliability, if a man's social origins are known. Therefore, placing a man within the context of his society and his culture allows one to make a large body of working assumptions about his learned reactions. If one does not stop with these assumptions, but adds to them a systematic assessment of those aspects of experience that make him unique—his experiences in his family, in his development, and throughout his life, to the present—as well as a systematic description of his milieu and his view of it, a delineation of his past preferred methods of reacting, and, if need be, an orderly assessment of his reaction to various challenging tests, one can make a reasonable working estimate of the way that a man evaluates his life situation without expending an amount of time that is prohibitive to the clinician.

### **Illness Clusters**

There is, then, a way of estimating how men perceive their life situations that yields information more closely relevant to specific human reactions than do the methods commonly used. One may ask,

"How well does this work?" In the Study Program, my co-workers and I have investigated this by taking advantage of the phenomenon of illness that we call "clustering." If one observes the patterns of illness displayed by people over many years, one finds that, although every man has his own mean rate of illness, the amount of illness that he experiences will fluctuate. There are likely to be continuous periods of several years during which he experiences many more new episodes of illness per annum than during all other years. These periods occur at no special time of life, and they have no fixed duration. A variety of syndromes are exhibited during them. These syndromes involve a number of organ systems, and apparently they arise from a number of causes. Approximately four-fifths of the 600 people whom we have studied intensively have experienced such "clusters of illness" during adult life. About one-third of all of their new episodes of illness have occurred during such periods. We have asked ourselves, "How are these periods of increased illness related to the events and situations these people have encountered as they proceeded through life?"

Dr. W. N. Christenson, Dr. F. D. Kane, and the author have investigated this question, using data derived from the Hungarians mentioned above.<sup>6</sup> Extensive information was obtained about the social and cultural background of 68 of these people, about their families, about their chronological development, and about their life histories, from birth onward. Their usual reaction patterns and their personality characteristics were evaluated by observation, by interview, and by their performance on a series of psychological tests. At the same time, other information was obtained independently about their history of illness and about their present health.

These two sets of data were transcribed and dealt with separately. The data on health were arranged chronologically by a medical statistician, while the data dealing with the background, the life histories, and

the personalities of the subjects were given to three investigators who worked independently and received no information about the informants' health. These investigators were asked to review all the "nonmedical" information, and then to make an estimate of the extent to which the subject's total situation during each year of his adult life allowed him to satisfy the requirements peculiar to his needs in life, and at what cost. The investigator estimated each subject's perception of his situation during each year on a five-point scale ranging, from "highly satisfactory" to "highly unsatisfactory." In this manner, 1234 years were rated for 68 subjects by each of the three observers, the possible combinations of ratings being 154,250.

The three investigators, each independently synthesizing a large body of data provided by anthropologist, sociologist, psychologist, and psychiatrist, showed remarkable uniformity in their evaluations of the relation of the Hungarians to their life situations year after year. Furthermore, on comparing the data on illness with those on the life situation, it was found that periods of life during which the informant's relation to his social and interpersonal environment had been evaluated as "highly unsatisfactory" were strongly associated with the occurrence of "clusters of illness" (Fig. 1).

These and similar studies indicate that there is a very significant relation between a man's evaluation of his life situation, his reaction to it, and the number of illness that he experiences. This inference is strengthened by the observation that the "more unhealthy" members of every group that we have studied have consistently evaluated their life situations as depriving, threatening, conflict-producing, or over-demanding, while the "more healthy" have not, even though, in many cases, the "unhealthy" have lived in a social and interpersonal milieu that other observers regarded as "objectively no different" from that of the healthy.<sup>4,7</sup> All of this is consistent with the hypothesis that a man

reacts to his social environment as he perceives it—which, as we have seen, is a hypothesis demanded by the very characteristics of the relation between a man and his "social" environment.

The diseases that occurred in increased number and severity during periods in which the environment was reacted to as threatening, depriving, overdemanding, or conflict-inducing were of all types and of all "causes."<sup>1,5</sup> Every reading of the data has suggested that if the reaction to the environment influenced the onset or course of one of these, it must have influenced them all. There was no special category of human disease that seemed to occur peculiarly during "clusters." Some, such as the common cold, were more frequent during clusters, but they were more frequent at

other times, also. Nor. was there any consistent relation between "emotional reactions" and "bodily disease," except in that those who had more "bodily disease" also tended to display more "disturbances of mood, thought, and behavior" at the same time.

These findings are consistent with experimental evidence.<sup>8,9</sup> The reaction of a man to his social environment involves patterns of adaptation mediated by all the major mechanisms by which bodily function may be influenced: the glands of internal secretion, the direct intervention of the nervous system (both "voluntary" and "autonomic"), and the gross behavior of the person. Such adaptive reactions may involve any bodily process that can be influenced either directly or indirectly by neural or hormonal

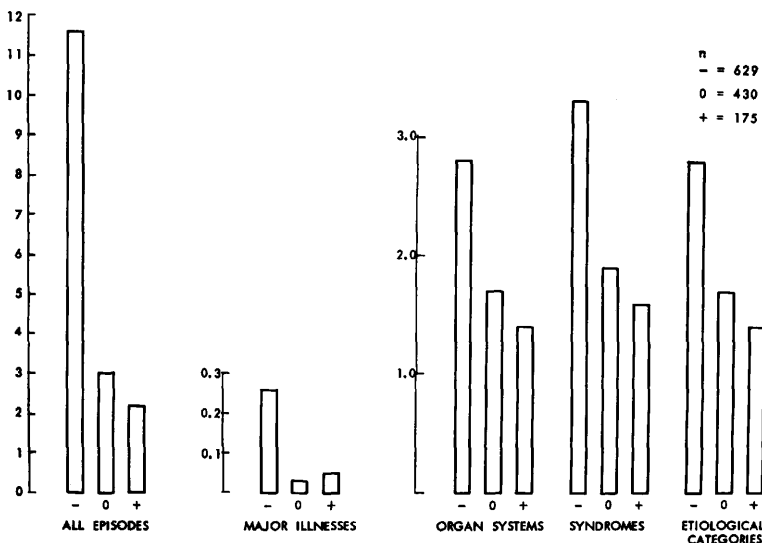


Fig. 1. Comparison of rates of illness during 1234 years scored. Columns represent mean rates. Columns marked "minus" represent years scored "unsatisfactory;" those marked "plus" represent years scored "satisfactory." During "unsatisfactory" years there was higher incidence of all illness episodes and of serious, life-endangering illnesses. In these years, informants displayed more syndromes, had more organ systems primarily involved in illness, and had illnesses that fell into more etiological categories. All differences are significant beyond the 1 per cent level.

influences. They also may involve all forms of human activity, including patterns of working, eating, drinking, and exposure to "disease-causing agents" of all sorts. While some disease processes are more autonomous and more slowly changing than others, there is no disease known that is entirely immune to all of these influences. The evidence from the field, like that from the laboratory, lends little support to the idea that there is a form of disease which is "psychosomatic," and therefore distinct from other forms of disease. One finds no illness which is not in some degree influenced by the way that men react to what goes on around them, and none that does not occur sometimes in association with manifestations of mood, thought, or behavior. Nor is there any reason to doubt that any disease that can be brought into awareness may play a role in the thoughts and emotions of the person, or, conversely, that any process within the central nervous system that is perceived as "thought" or "emotion" may, in some manner and in some degree, influence the course of any disease. The question, therefore, is not one of whether or not these things can occur; the question is, "In what manner, when, and to what degree *do* they occur, and how relevant *are* they to illness?"

### Ecological Viewpoint

The ecological point of view involves assumptions more fundamental than what one might infer from simple considerations of placing the subject in his cultural and social context and of obtaining a concise and efficient medical history from him. The ecologist makes the scientist's assumptions that there is a real world, of which man is a part, and that the "mental world"—the sensations, ideas, and emotions experienced by a man—represents his awareness of processes going on within him. This assumption, not entirely palatable to the philosopher, has served the working scientist well. The ecologist views life as based upon the maintenance of a dynamic steady

state within a highly ordered system, and he is concerned with the interactions that occur between this system—the living organism—and the environment in which it exists. When he is concerned with the individual man and his "social environment," he is concerned with an exceedingly complex process of gathering information, evaluating it, and integrating patterns of adaptive response which is largely carried out by the higher centers of the central nervous system but which affects all functions of the human organism. The approach of the ecologist is biological, and his assumption is that those aspects of human biology that are "social" or "behavioral" are different from the remainder of the natural world only in degree, complexity, and order. There is no room in the ecological point of view for concepts based upon the primacy of a mental world. Such concepts belong to another way of describing life that is not less valid or less meaningful but is less useful to the biologist dealing with the human organism.

The weight of the evidence is that man's interaction with his "social" and "interpersonal" environment is relevant not just to his "emotional state" or to his "mental health," but to all of the illness that he experiences. This relationship is, in the last analysis, a "life and death proposition" for him. Man's interaction with his social environment affects the course of all of his illness, sometimes to a great degree, and sometimes to only a small degree. How much, in what manner, and under what circumstances are the questions to be determined in each instance.

The assessment of the effects of adaptive reactions upon health, and the institution of treatment designed to cope with these, do not constitute a special category of psychiatry, even though such measures may be relevant to the syndromes that psychiatrists treat, as well as to those that other physicians treat. It is a mistake to try to erect out of this a special brand of medicine, designated by a prefix and a hyphen. Medicine will remain what it has always been:

the healing art. Logically, there can be only one brand of medicine. This must consist of doing that which is best for the health of the patient, at the least cost to him and to others. The physician, who is charged with the preservation of health and the treatment of disease, will concern himself with man's relation to his social environment when this is relevant to his health. If he intervenes in this relation, we can expect that he will do so as a physician acting to preserve health or to treat disease. This may make it necessary for him to acquire special skills, but it will not require him to create a new kind of medicine.

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### Discussion

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DR. HINKLE'S paper brings before us some of the complexities of the theoretical construct within which we function in thinking about human reactions related to disease.

Dr. Hinkle first points out that illness is not equally distributed in the population but is highly concentrated within a relatively small section of it. This is an area to which his studies of telephone operators contributed a great deal of exact knowledge, illustrating for the first time, through records collected at the time illnesses were suffered, that this group of frequently sick individuals tended to be a rea-

sonably constant one over many years of occupational history. Once an individual entered the "often-sick" group, he tended to stay in it, and individuals who tended to stay well could be predicted to stay well in the future.

This work demonstrated to Dr. Hinkle's satisfaction that although sick people often carried heavy loads of environmental stress, not all did. Furthermore, many people who stayed in the "healthy" group suffered under environmental stresses equal to those carried by members of the "sick" group. The fact that the data complicated his theoretical construct did not pre-